The wind veered to west and attained its greatest force after the barometer began to rise."

By the 20th the centre of disturbance had reached N. 50°. W, 45°, having moved northeastward at no great distance from the Newfoundland coast; on this date the s. s. "Circassian," W. Richardson, commanding, had a heavy s. gale, hauling to w., with torrents of rain and very high sea, in N. 50° 10′, W. eastward as far as the thirtieth meridian.

On the 22d the depression was shown near N. 52°, W. 25°; the s. s. "Wandrahm," N. J. Hundewadt, commanding, had a heavy gale from wsw. to sw. and nw., in N. 47° 30′, W. 27° 10′, lowest barometer reading 29.55 (750.6), and other vessels, between W. 25° and 15°, had moderate to strong s. gales, with the country the mean temperature for the month has been barometer ranging from 29.46 (748.3) to 29.9 (759.4). A rapid increase had occurred in the barometric gradient to the westward of thirtieth meridian, so that strong nw. gales prevailed over that region.

By the 23d the depression had either filled in or moved with greatly increased pressure toward the northern coast of the

6.—This area is a continuation of the disturbance described as low area vii. under "Areas of low barometer." During the 25th, the depression passed northeastward along the coast of Nova Scotia and over Newfoundland, and on the 26th it was to the northward of 50° N., and between W. 40° and 50°. The barometer ranged from 29.7 (744.4) to 29.9 (759.4), with strong breezes to gales from w. and sw. over the region between N. 45° and 50°, and from the eastern coast of Newfoundland to the fortieth meridian. By the 27th, the disturbance had disappeared.

7.—This disturbance occupied mid-ocean during the closing days of the month; on the 29th, there was a decrease of about .3 inch over the region north of the forty-fifth parallel, and from W. 40° eastward to W. 20°; until the close of the month, the pressure over the above region ranged from 29.23 (742.4) to 29.7 (754.4).

TEMPERATURE OF THE AIR.

[Expressed in degrees, Fahrenheit.]

The distribution of mean temperature over the United States and Canada for December, 1884, is exhibited on chart ii. by the dotted isothermal lines; and in the table of miscellaneous data are given the monthly means for the various stations of the Signal Service.

In the following table are given the averages for the several geographical districts with the normals and departures, as deduced from the Signal Service observations:

Average temperatures for December, 1884

Districts,	A verage Signal-Se serva	Compariso of Dec, 1884, with		
	For sev- eral years.	For 1884.	the averag for several years.	
New England	30.4	31.9	+ 1.	
Middle Atlantic states			I ::	
South Atlantic states		50.4	I ::	
Florida peninsula			Ŧ i.	
Eastern Gulf states				
Western Gulf states			<u> </u>	
Rio Grande valley		59.1	! — i.	
Tennessee		41.2		
Ohio valley		34.3	— i.	
Lower lake region		28.7		
Upper lake region		22.9	- 1.	
Extreme northwest	11.1			
Upper Mississippi valley				
Missouri valley	23.7	11.2	_ 3.	
Northern slope				
Middle slope		21.5		
Southern slope		44.I	— j.	
Southern plateau		44.0	_ 6.	
Middle plateau				
Northern plateau		19.5	—ı3.	
North Pacific coast region		33 7	<u> </u>	
Middle Pacific coast region		49.6	+ 1.	
South Pacific coast region		53.1	<u> </u>	
Mount Washington, N. H		11.9	; +3·	
Pike's Peak, Colo	6.5	5.4	— 1.	

On chart iv. the deviations from the normal temperatures are graphically exhibited by dotted lines connecting stations of equal departures.

In the districts on the Atlantic and Gulf coasts, in the middle plateau and middle Pacific coast region, the mean temperature for December has been above the normal, the stations reporting the greatest departures being as follows: 44° 0', and moderate to strong s. gales were reported to the Kitty Hawk, North Carolina, +3°.6; Barnegat City, New Jersey, +3°.5; New Orleans, Louisiana, +3°.4; Wilmington, North Carolina, and Salt Lake City, Utah Territory, +3°.3; Portland, Maine, Augusta, Georgia, and Winnemucca, Nevada,

In Texas and over the interior and northwestern portions of below the normal, the departures being unusually large from the upper Mississippi valley westward to the Pacific coast; at stations in Montana the mean temperatures varied from 15° to 23°.3 below the normal.

DEVIATIONS FROM MEAN TEMPERATURE.

The departures exhibited by the reports from the regular Signal Service stations are shown in the table of average temperatures for the various districts; in the table of miscellaneous data, and on chart iv. The following notes in connection with this subject are reported by voluntary observers:

Arkansas.—Lead Hill, Boone county: mean temperature, 29°.1 is 11°.4 below the December average for the last three years.

Dakota.—Webster, Day county: mean temperature, 9°.1, is 5°.6 below the December average for the two preceding years. Illinois.—Mattoon, Coles county: mean temperature, 28°.5, is 2°.1 below the December average for the last four years.

Swanwick, Perry county: mean temperature, 29°.2, is 4°.7 below the December average for the last two years.

Riley, McHenry county: mean temperature, 19°.4, is 2°.4 below the December mean for the last twenty-three years.

Peoria, Peoria county: mean temperature, 27°.3, is 1°.4 below the December average for the last thirty years.

Sycamore, DeKalb county: mean temperature, 20°.5, is 7°.0 below the December average for the last three years.

Indiana.—Vevay, Switzerland county: mean temperature. 34°.0, is 0°.7 below the December average for the last twentyone years.

Wabash, Wabash county: mean temperature, 26°.0, is 3°.9 below the December average of the last eight years.

Spiceland, Henry county: mean temperature, 27°.2, is 2°.0 below the December average for the last thirty-one years.

Iowa.—Dr. Gustavus Hinrichs, director of the State Weather Service, Iowa City, reports the mean temperature for the month to have been 5° below the normal.

Kansas.—Independence, Montgomery county; mean temperature, 25°.4, is 6° below the December average for the last thirteen years.

Emporia, Lyon county: mean temperature, 22°.4, is 7°.4 below the normal; it was 9°.5 below the December average for the four preceding years.

Lawrence, Douglas county: mean temperature, 23°.5, is 6°.3 below the December average for the last sixteen years.

Wellington, Sumner county: mean temperature, 23°.1, is 6°.9 below the December average for the last six years.

Maine.—Gardiner, Kennebec county: mean temperature, 26°.8, is 4°.4 above the December average for the last fortynine years.

Maryland .- Fallston, Harford county: mean temperature, 34°.0, is 0°.9 above the December average for the last nine years.

Missouri—Saint Louis: mean temperature, 29°.8, is 3°.6 below the December normal.

New Hampshire .. -- Contoocook. Merrimack county: mean temperature, 27°.9, is nearly 4°.5 above the December average.

New Jersey.—South Orange, Essex county: mean temperature, 33°.9, is 3°.7 above the December average for the last fifteen years.

Table of comparative minimum temperatures for the month of December.

04-4-	Minimum for December, 1884 Signal Service.	,	Minimum since Signal-Service of opened—3 to 13 year	stations s.	were	Lowest from any other source.			
State or Territory.	Station.	Tempera- ture.	Station.	Tempera- ture.	Year.	Place.	Tempera-	Year,	
	Wantanana	0	Montgomery	o 8	1880	- Huntavilla	0		
abama Do	Montgomery		Mobile,,	14	1880	Huntsville	- 7 14		
Eoda	Fort Apache	8.0	Fort Apache	- 2	1879	Fort Canby (old)	25	1855	
Do	Fort Verde		PrescottLittle Bock	—18 6	1879 1880	Fort Whipple	-9		
Do	Little RockFort Smith		Fort Smith	9.5		Washington (near)	- 0	1845	.
ifornia	Red Bluff	25.0	Red Bluff	25	1882, 1883	Fort Jones	-17	1855, 1857	ïl
Do	San Francisco		San Francisco Denver	34 25	1879 1870	Camp Bidwell	—10 —30	*****	
orado Do	Pike's Peak		Pike's Peak	-37	1878	Fort Lyon	—30	1876	
pecticut	New London	5.2	New London	I	1875, 1880	Middletown	—18	1860	
Do	New Haven		New Haven Forts Buford and Stevenson	— 4 —40	1880 1879	New Haven	-11		
ota	Fort Buford	39.8	Pembina		1879	Fort Stevenson	—54 —51	1879 1879	
Do aware	Delaware Breakwater	8.9	Delaware Breakwater	ī	1880	Fort Delaware	! 9		
trict of Columbia	Washington City	ó.ı	Washington City	-13	1880	Washington City	. —10	*************	
rida	Pensacola Key West	23.0	Pensacola		1880 1876	Fort Barrancas	15 48		
Do rgia	Atlanta	11.0	Atlanta	ī	1880	MCPherson Barracks	-1	1880	
Do	Augusta	23.0	Augusta	7	1880	Augusta Arsenal	ro		[
ho	Lewiston	<u> —</u> 6.0	Lewiston	-10	1879	Fort Hall	-30	1879	2
Donois	Boisé CitySpringfield	7·3	Springfield	—I4	1880	Fort Lapwai Rock Island Arsenal	-15 -20	1865	ا د
Do	Chicago	—11.2	Chicago	-15	1880	Unicago	20		.::
iana	Indianapolis	12.3	Indianapolis	-15	1876	Wabash	—ı8	1880	
Do			Fort Sill	2	1879, 1880	Spiceland	-11 -18	1880	
ian Territory a	Davenport		Davenport		1876	Cresco	-35	1879	
Do	Dubuque	17.1	Dubuque	-19	76, 79, 80	Dubuque	-23		
1888	Dodge City	11.8	Dodge CityLeavenworth	-15	1876 1880	Fort Wallace	-24	1876	
Do tucky	Leavenworth		Louisville	—14 — 7	1880	Fort Leavenworth	—19 — 8		
isiana	Shreveport		Shreveport	10	1880	UBK8.10088	10	1880	
Do	New Orleans	28.8	New Orleans	20	1880	New Orleans	19		
ine	Eastport		Portland	—20 —12	1875 1875	Gardiner	-24		
Dorvland	Portland	8.6	Baltimore	-3	1880	Portland Emmitsburg	—13 —19	1880	
Do			***************************			Daitimore	4		
ssachusetts	Boston	— 9.5	Springfield	—10 —11	1875	Billerica	—20	1876	
bo :higan	Thatcher's Island Escanaba	7.2	Escanaba	—10 —23	1875 1880	WilliamstownFort Brady	41 41		
Do	Detroit	6.1	Detroit	—ıi	1880	Detroit	—i3		
nesota	Saint Vincent	47.8	Saint Vincent	-42	1880	FOR Kinley	-40		
Do	Saint Paul Vicksburg	27.0	Saint PaulVicksburg	-39 12	1879 1880	Fort SnellingVicksburg	-34	1868	
eissippi Do	* 10-0041 g				1000	Fayette	17	1880	
souri,	Saint Louis	7.0	Saint Louis	15	1880	Rolla (near)	-23	1870	
Do	TA TD		SpringfieldFort Benton	- 4 -59	1882 1880	Saint Louis	-7	-00-	
ntana	Fort Benton	 50.5 50.0	Fort Assinaboine	-39 -42	1880	Fort Benton	52 53	1880 1871	
	Omaha		Omaha	—i7	1879	Sydney Barracks	—37	1879	ٔ
Do	North Platte	18.0	North Platte	—27	1879	Giendale	I − 30	1868	В
ada	Winnemucca	0.0	Mount Washington	-20 -47	1879 1876	Fort Halleck	22	1879	
v Hampshire v Jersey	Mount WashingtonSandy Hook	42.0	Sandy Hook	-47	1880	Dartmouth CollegeLinden	—29 —18	1880	
Do	Barnegat City	0.2	Barnegat City	- 7	1880	Paterson	— 6	1880	
v Mexico	Santa Fé	2.0	Santa Fé	—13 —17	1879	Fort Union	—28	1855	5
w York	Albany		Albany	— š	1875 1875, 1880	Madison Barracks	-44 - 9	1871	
Doth Carolina	Charlotte	11.0	Charlotte	— 5	1880	RochesterLenoir	—19 — 8	1880	
Do	Kitty Hawk	14.7	Kitty Hawk	8	1880	Fort Johnson	9	*********	
0	Sandusky		Cleveland and Columbus	—I3 —I2	1880 1880	Kenton	-20	1876	
Do гоп	Roseburg	7.9 19.2	Roseburg	7	1879	College Hill	-12 - 8	1880 1879	
Do	Portland	12.0	Portland	3	1879	Fort Dalles	— 6	10/9	
nsylvania	Erie	5.9	Erie	-11	1880	Lewisburg	—23	1865, 1867	
Dode Island	PhiladelphiaBlock Island	0.8	Philadelphia	- 5 - 3	1880 1875	Philadelphia	3		
th Carolina	Charleston	20.0	Charleston	13	1880	ProvidenceAiken	—12 3	1880	
Do			***************************************			Charleston	20		
nessee	Nashville		NashvilleKnoxville	— 2 — 5	1876 1880	Clarksville	-4	1880	- 1
Do	Knoxville	5.2	Fort Stockton	- 5 8	1880	Humboldt Camp Stockton	- 3 - 9	1859	
Do	Fort Elliott	2.0	Fort Elliott	10	1879	Fort Griffin	- 7	1870	
b	Salt Lake City	6.6	Salt Lake City		1879	Fort Crittenden	-22	1859	9
Do	***************************************		Burlington		1870	Camp Douglas	- 8	1879	۱,
mòntginla,	Lynchburg		Lynchburg	—19 — 5	1879 1880	Lunenburg	-30 12	1868	
Do	Norfolk	12,2	Nortolk	ő	1880	Fortress Monroe	17		
shington Territory	Olympia	. 8.0	Olympia	8	1879	Fort Colville	-22		1
Do	Dayton		Morgantown	- 0.0		Fort Townsend	-22	1872	
t Virginiaconsin	La Crosse	—26 O	La Crosse	— 9 —26	1880 1879	FlemingtonFort Howard	-21	1880	- 1
Do	Milwaukee	21.6	Milwaukee	-21	1850	Milwaukee	-38 -19		- 1
oming	Cheyenne	13.4	Cheyenne	-24	1879, 1880	Fort Fetterman	—36		- 1
Do	Fort Bridger	5.6	Fort Washakie	-2 7	1882	Fort Bridger	<u>—28</u>		

New York,—North Volney, Oswego county: mean temperature, 26°.5, is 0°.9 above the December average for the last seventeen years.

Palermo, Oswego county: mean temperature, 23°.5, is 0°.9 below the December average for the last thirty-one years.

Ohio.—Wauseon, Fulton county: mean temperature, 24°.5, is teen years. 2°.2 below the December average for the last fourteen years. Virginia.-

Pennsylvania.—Dyberry, Wayne county: mean temperature, 27°.5, is 2°.5 above the December average for the last twenty years.

Vermont.—Woodstock, Windsor county: mean temperature, 21°.8, is 2°.2 above the December average for the last seventeen years.

Virginia.—Wytheville, Wythe county: mean temperature.

38°.3, is 3°.2 above the December average for a period of twenty years.

Variety Mills, Nelson county: mean temperature, 38°.1, is 1°.4 above the December average for the last eight years.

Washington Territory.—Bainbridge Island: mean temperature, 33°, is the lowest December average for the last seven years.

West Virginia.—Helvetia, Randolph county: mean temperature, 35°.8, is 2°.2 above the December average for the last eight years.

Fort Assimabolue, Fort Benton.

RANGES OF TEMPERATURE.

The monthly and daily ranges of temperature at the various Signal Service stations are shown in the table of miscellaneous meteorological data. The monthly ranges were unusually large in Montana, the following stations reporting ranges exceeding 100°: Poplar River, 100°.1; Fort Custer, 105°.5; Fort Shaw, 106°.7; Fort Assinaboine, 113°.8; Fort Benton, 125°.7.

The smallest monthly ranges are: 20° at Key West, Florida, and 24° at San Francisco, California.

LOW TEMPERATURES.

The following notes relating to the low temperatures of December, 1884, have been reported:

Colorado.—West Las Animas: on the 24th the temperature fell to —6°.6, and on the 31st it fell to —21°.5.

Dakota.—Fort Bennett: the minimum temperature of the 25th was —41°.3; the lowest previously recorded since 1880 was —42° in January, 1883.

Florida.—Pensacola, 19th: the first ice of the season formed on this date; the temperature fell to 23°, which is the lowest recorded since this station was opened in 1879, with one exception, viz.: 17° on December 30th, 1880.

Illinois.—Chicago: on the 18th the temperature remained below zero all day, the daily mean being —6°.6; on the morning of the 19th the lowest temperature recorded was —11°.2.

Iowa.—Des Moines: on the 18th the temperature did not rise above zero, and on the a. m. of the 19th the thermometer registered —18°.2, being the lowest that has been recorded in December since Signal Service observations were begun in 1878.

Maine.—Portland: intensely cold weather prevailed in the northern and central portions of the state on the 27th, the following temperatures being reported: from -22° to -26° at Buckfield, Canton, Farmington, Strong, and Waterville; and -35° at Farmington Falls.

Eastport: the minimum temperature, —21°, on the morning of the 20th, is the lowest recorded since the establishment of this station in 1874; in January, 1874, and December, 1875, the temperature fell to —20°, being the next lowest on the record.

Bangor: on the morning of the 20th thermometers in various localities in this vicinity showed temperatures ranging from -20° to -24° ; at noon the temperature was about zero, and at night it had fallen to -10° ; on the morning of the 21st it was -6° , and rose rapidly during the day. On the 27th temperatures varying from -10° to -15° were recorded, and reports from Holton, ninety miles north, state that the temperature fell to -35° .

Michigan.—Hudson: the night of the 17-18th was the coldest that has been experienced for the last fifteen years, the temperature falling to -28°.

Minnesota.—Saint Paul: on the 25th the temperature was stationary at —27° from 5.56 to 9.30 a.m. A self-registering thermometer attached to a wooden box and exposed on the roof of the building recorded a temperature of —36°.5.

Montana.—Fort Assinaboine: the minimum temperatures on the 24th and 25th, —47°.2 and —50°.0, are the lowest of which there is a record; mercury froze on the 22d, 24th, and 25th.

Fort Benton: the minimum temperature on the 24th, —56°.5, is, with the exception of —59° in 1880, the lowest on the records of this office.

In the following table are shown the daily extremes and the mean temperatures at the coldest stations in Minnesota, Dakota, and Montana. As the cold weather set in about the middle of the month, the means for the first fifteen days and for the last sixteen days of the month are given separately. A comparison of the means for the first and second portions of the month shows remarkable ranges, varying from 32°.8 at Fort Totten to 43°.8 at Fort Benton:

Dates.	Fort Assinaboine, Mont.			Fort Benton, Mont.			Fort Custer, Mont.			Fort Shaw, Mont.		
a-mpt Pr	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.	Меяп.
- · 								-				
I		44-4		69.2	36.1	43.2	54.1 58.0	29.3 26.2	34.7 38.2	62.2	45.3 36.8	38.
3	51.4 50.1	31.1 33.7	35.2 35.2		27.9 37.2		55.7	34.9	38.1	52.5 50.0	32.0	36. 34.
4	40.4		33.5	50.8	29.2	36.7	49.7	34.3	35.4	46.0		32
5	45.3	29.6	33.0		35.4	35.1	52.0		32.7	46.0	33.5	42
б		19.8	24.3	37.5	20.8	24.7	40. I	24.0	26,6	33.5	20.0	26
<i>7</i>			23.2	32.2	10.1		33.1	17.8	21.0	29.0		19
9	40.8 39.8		31.4 28.5	39.9			42.8 39.3	8.0 14.0	21.8 26.0	35.5 35.0	26.2	24
O,			21.0				36.7	18.8	23.2	34.0	23.5 8.7	25 15
1	22.3	9.1	15.4	17.8	4.3	10.7	27.8	9.1	16.2	17.0	6.0	13
2	216	11.7	17.2				18.9	9.0	13.7 15.8	15.0		13
3		10.9	15.3			8.5	22.2	12.9 2.8	15.8	14.5	— o.s	4
4 5	- 7.9	—10.8 —21.2	1,1 13.0			2.3 —13.8				10.5 — 6.5	- 6.5 -28.0	—17
Means	34.4	17.5	22.7					i	22.6	31.8	- 1	20
												
б .	— 3.4 — 7.0 — 7.7	-27.0	—11.7 16,2	- 9.3 - 1.8	-25.9	—15.1 11.0	— 4. 0		—14. I	—16. 5	-29.8	—22
7 8	— <u>7.</u> 0	-25.0	-10.2	j— <u>1</u> .8	-20.9	II.O	1.0	-16.0	7.0	— <u>3</u> .5	20.8	—10
8 9	二 <u>7·</u> 2	—27.1 —15.3	—12.8 — 8.4	7.3	_10.1	-11.3	0.0 I.0	—I2.0	<u>_ 5.3</u>	_ 2.5	-15.5	—10 — 8
Ó	- Š.7	-15.3 29.5	- 17.8	— 6.8	-20 1	6.9 20.7	o.8	_ 76 6	— 7.0 — 5.3 — 2.8 — 8.7	3.5 6.5 6.5 7.5		— 8 —21
I	I7.7	22.2	-24 2	-12.6	-31.8	26.7	5.0	-20.0	— 15.3 —17.7 —26.0 —36.6	-15.0	-34.0	— <u>2</u> 8
2	2I.I	-42 2	-29.4	-24.5	47.5	-34.8	—ı3.7	-24.9	-17.7	-19.0	-41.0	-28
3 4	-13.9			-14.9	-39.5	-27.7	-13.3	-39.0	-26.0	-15.0		-25
5 5 7	-25.0 - 7.8		—30.0 —30.4	-29.2 - 4.5	—56.5 —47.6	-44.3 -20.7	-24.2	-47·5	-36.6 -16.2 - 0.8 - 0.4	-24.0 30.5	-44.5 -24.0	—32 2
D	- 1.0	-13.0	- 3.3	1.5	—ii.4			— 7.9	- o.8	— I.5	_ 8.o	— 6
7	1.6	-18.4	8.4	I.5	-24.5	-11.2	3.1 2.1	一 7.9 — 2.0	- 0.4	— 1.5 — 2.0	-25.0	-14
~	-11.0	-37.5	r9.o	<u>—</u> 10,1	-37.4	-23.7		—I5.0	-10,2	-14.0	—2 8.0	20
9 0	-11.0	-28.5	-15.7	—11.5 —16.2	-35-4	-24.8	-11.0	-20.0	18.9	—14.o	-26.5	—2I —22
U		-30.9 -46.6	-25.2 -26.9	—10.2 —17.6	—40,2 —46,2	-30.1 -38.2	— 3.5 —13.5	_25.0	— 0.4 —10.2 —18.9 —14.8 —22.7	- 12.0 - 6.0	-28.0 -25.0	
			-		—32.7	l i		—22, I			- 1	
Means	-10.3		-10.0	-10.3	-32.7					- 0.3		
				. 1								
	<u> </u>	lar Ri Mont,			rt Bufc Dak.			rt Tott Dak.		Sain	t Vince Minn.	
l'ates.	Pop	lar Ri	ver,	For	rt Bufe	ord,	For	rt Tott	en,	Sain	t Vince	ent,
Dates.	Pop	lar Ri Mont.	ver,	For	rt Bufc Dak.	ord,	For	rt Tott Dak.	en,	Sain	t Vince	ent,
l'ates.	<u> </u>	lar Ri			rt Bufe			rt Tott		Sain	t Vince	
<u> </u>	Pop	lar Riv Mont.	Mean.	For	rt Bufe Dak.	Mean.	For	rt Tott Dak.	Mean.	Nay.	t Vince	Mean.
1 2	Pop	lar Ri Mont.	ver, Wesu. 36.4	For X 199	rt Bufc Dak.	ord,	For	rt Tott Dak.	en, Wesn 34.1	Sain 36.5	t Vince Minn.	ent,
1 2 3	Por .xe W 50.9 49.9	29.4 28.1 26.7	ver, 36.4.6 34.6	For X 99 1 56.8 48.4 46.8	rt Bufc Dak.	38.3°		rt Tott Dak.	en, "" 34.1 35.7 32.2	Sain .x 8 36.5 44.8 44.8	t Vince Minn.	ent, 1893. 27 35
1	Pop .x*W 50.9 48.99 48.8	29.4 26.7 26.7	ver, 36.44 34.8 35.8 33.8	Fo: XBW 56.8 446.4 41.1	32.7 28.5 29.7 28.9	38.3' 37.0' 35.6'	For 242.1 43.0 41.0 38.0	rt Tott Dak. 27.5. 31.0. 26.3 20.3	en, .u. # # 34.1 35.7 32.2 28.9	Sain 36.5 44.8 44.8 37-7	t Vince Minn.	ent, 10897 27 35 33
2	Pop x & W 50.99 49.99 48.98 48.3	29.4 26.1 26.7 26.0 22.9	76.46 36.46 35.88 33.88	Fo. X 8 M	32.7 28.5 29.7 28.9 27.5	38.3' 37.0' 35.6'	. X & M 42.1 43.0 41.0 38.0 41.2	27.5. 31.0. 26.3 20.3 20.3	en, 34.1 35.7 32.2 28.9 32.5	Sain 36.5 44.8 37-7 38-7	t Vince Minn.	ent, 27 35 33 27 29
2	Pop x e W 50.9 49.9 48.9 48.9 48.3	29.4 26.1 26.0 22.9 18.9	Ver,	56.8 48.4 40.8 41.8 39.9	32.7 28.5 29.7 28.5 29.7 28.9 27.5.1	38.3' 37.0' 35.6' 31.9 32.5	42.1 43.0 41.0 38.0 41.2 36.0	27.5. 31.0. 26.3. 20.3. 22.8. 26.9.	en, 	36.55 44.8 44.8 37.7 38.7	t Vince Minn.	ent, 189M 27 35 33 27 28
2	Pop \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	29.4 26.1 26.0 22.9 0.1 9.6	Wer, 36.46 35.8 30.9 24.0 21.21	56.8 48.4 40.6 41.1 41.8 39.9 26.0 37.5	32.7 28.6 29.7 28.9 27.5 25.1 11.1	38.33 37.06 35.66 31.9 32.55 26.8 15.7 28.2	.xe 42.1 43.0 38.0 41.2 36.8 21.5	27.5.31.0.26.3 20.3 22.8 26.0 16.0 4.0	94.1 34.1 35.2 28.9 32.5 28.2 22.1 13.0	36.58 44.8 37.7 38.7 34.5 30.5 328.7	t Vince Minn. 17.8 26.2 30.8 16.2 18.8 26.3 18.9	277 353 3327 29 28 24
	Pop 30.9 49.9 49.9 48.3 29.9 18.9 37.4 34.4	29.4 28.1 26.7 26.0 22.9 18.9 0.1 9.6	Wer, 36.4.6 35.88 34.6 35.88 30.9 24.0 13.4.2 21.2.1	56.8 48.4 40.4 41.8 39.9 26.0 37.5	32.7 28.5 29.7 28.5 29.7 27.5 25.1 11.2 12.13	38.3 37.0 35.6 31.9 32.5 26.8 15.7 28.2	42.1 43.0 41.0 38.0 41.2 36.0 28.8 21.5	27.5. 31.0. 26.3. 20.3. 20.3. 20.3. 20.3. 6.0. 4.0.	en, 34.1 35.7 32.2 28.9 32.5 28.2 113.0 24.8	36.5 44.8 44.8 37.7 38.7 38.7 38.7 31.3	t Vince Minn.	275 353 327 29 28 24 12 20
5	Pop 30.9 49.9 49.9 48.3 29.9 18.9 37.4 34.4	29.4 26.7 26.0 22.9 18.9 0.1 9.6	Wer, 36.4.0 34.0 35.8 33.9 24.0 13.4 25.1 20.7	56.8 48.4 40.4 41.1 41.8 39.9 37.5 37.5 37.5	32.7 28.6 29.7 28.5 29.7 28.5 29.7 28.5 29.7 28.5 29.7 20.1 21.1 23.8	38.3 37.0 35.6 31.9 32.5 26.8 15.7 28.2 29.3	42.1 43.0 41.0 38.0 28.8 21.5 35.0 28.5	27.5. 31.0. 26.3 20.3 22.8 26.0 16.0 4.0 6.5 2.5	en, "" 34.1 35.7 32.2 28.9 32.5 28.9 13.0 24.8 12.2	36.5 44.8 44.8 37.7 38.7 38.7 31.3 30.8 28.7 31.3 329.1	t Vince Minn.	277 353 337 29 28 24 12 20 16
	Pop 50.99 48.8 48.3 29.9 37.4 34.3 29.58	29.4 28.1 26.7 26.0 22.9 18.9 0.1 9.6	761, 36.4, 36.35.8, 30.9, 33.8, 30.9, 33.4, 34.3, 36.2	56.8 48.4 40.4 41.8 39.9 26.0 37.5	32.7 28.5 29.7 28.9 27.1 11.2 12.3 13.0 0.0	38.37.0 37.0 35.6 31.9 32.58 15.7 28.2 29.2 17.4 3.5 3.5	.xe M 42.1 43.0 41.0 38.0 41.2 36.0 28.8 21.5 35.0 28.5 13.0	27.5.31.0 26.3 20.3 22.8 26.0 16.0 4.0 6.5 2.5. 3.0	en, 34.1 35.7 32.2 28.9 32.5 28.9 13.0 24.8 12.2 6.4	Sain 36.5 44.8 37.7 38.7 34.8 37.7 31.3 29.7 16.7	t Vince Minn. 17.8, 26.2, 30.8, 16.2, 18.8, 26.3, 18.0, 0.9, 13.1, 5.0	277 353 337 29 28 24 12 20 16
	Pop 50.9.9.9.48.8 48.3 48.3 29.9.9 18.8 48.3 19.8 19.8 19.8	29.4 28.1 26.7 26.0 22.9 0.1 9.6 14.9 15.9 — 1.9	ver, 36.4. 35.8 33.8 33.8 32.2 21.2 20.7 4.0 4.0	56.8 48.4 40.8 41.8 39.9 26.0 37.5 37.1 30.0 18.1 8.8 22.2	32.7 28.5 29.7 28.9 27.1 11.2 12.3 13.0 0.0	38.37.0 37.0 35.6 31.9 32.58 15.7 28.2 29.2 17.4 3.5 3.5	42.II 43.0 38.0 41.0 38.0 28.8 21.5 35.0 9.0 21.0	27.5. 31.0. 26.3 20.3 22.8 26.0 16.0 4.0 6.5 2.5 3.0 1.0	en, 34.1 35.7 32.2 28.9 32.5 22.1 13.6 6.2	36.5 44.8 44.8 37.7 38.7 38.7 31.3 30.8 28.7 31.3 329.1	t Vince Minn.	27 35 33 27 29 28 24 20 16 9
	Pop 50.99948.8 48.3 29.9 18.99 18.9 18.4 34.3 29.5 18.6 10.4	29.4 28.1 26.7 26.0 22.9 0.1 9.6 14.9 15.9 — 1.9	ver, 36.4. 35.8 33.8 33.8 32.2 21.2 20.7 4.0 4.0	56.8 48.4 40.8 41.8 39.9 26.0 37.5 37.1 30.0 18.1 8.8 22.2	32.7 28.5 29.7 28.5 27.5 25.1 11.2 12.3 8 13.0 0 1.0 8.1	38.3 37.0 35.6 31.9 32.5 26.8 15.7 28.2 29.3 17.4 3.5 5.3 12.9	.x 8 42 .1 43.0 41.0 38.0 28.8 35.0 28.5 13.0 28.0 18.0	27.5. 31.0 26.3 20.3 20.3 20.3 20.3 20.3 3.0 4.0 6.5 2.5 3.0 3.0 7.2	en, 34.1 35.7 32.2 28.9 32.5 28.2 12.1 13.8 12.2 6.2 12.4 6.2	36.5 344.8 44.8 37.7 34.5 30.8 29.1 16.7	t Vince Minn. 17.8, 26.2, 30.8, 16.2, 18.8, 26.3, 18.0, 18.	277 353 327 299 28 24 122 200 16 9 9 9
5	Pop 50.99 48.99 48.83 48.83 29.99 18.94 34.33 29.58 10.44 10.5	29.4 26.7 26.7 26.0 22.9 18.9 0.1 15.9 11.9 11.3 -22.8	36.4 34.6 35.8 30.9 24.0 21.2 25.1 4.0 0 11.8 - 2.3 - 16.8	56.8 46.8 41.1 41.8 39.9 26.0 37.5 37.1 30.0 18.1 8.8 22.2 12.4	32-7, 28.5 29.7, 52.1, 21.1, 23.8 13.0 0.0 1.7.5 — 17.0	38.3 37.0 37.0 37.0 32.5 26.8 15.7 28.8 15.7 28.3 17.4 3.5 5.3 11.8 11.8	42.1 43.0 41.0 36.0 28.8 21.5 35.0 28.5 13.0 9.0 21.0 18.0	27.5. 31.0. 26.3 20.3 22.8 26.0 16.0 5.5 2.5 3.0 1.0 0.7.2	en, 34.1 35.7 328.9 32.5 28.2 13.0 24.8 12.4 6.4 6.2 12.4 10.8 12.6	36.5 44.8 44.8 37.7 38.7 38.7 30.5 28.7 31.3 29.3 16.7 14.1 21.7 19.4	t Vince Minn. 17.8 26.2 30.8 16.2 18.8 26.3 18.0 3.9 0.9 13.1 5.0 3.9 0.4 — 9.4	277 355 333 277 299 28 24 12 200 16 9 9 11 0 0
1 2 3	Pop 50.9 49.9 48.9 48.9 48.3 20.9 18.9 37.4 34.3 29.5 18.8 6.4 10.5 29.4	29.4 28.1 26.7 26.0 22.9 0.1 9.6 14.9 15.9 — 1.9	ver, 36.4. 35.8 33.8 33.8 32.2 21.2 20.7 4.0 4.0	56.8 48.4 40.8 41.8 39.9 26.0 37.5 37.1 30.0 18.1 8.8 22.2	32.7 28.5 29.7 28.5 27.5 25.1 11.2 12.3 8 13.0 0 1.0 8.1	38.3 37.0 35.6 31.9 32.5 26.8 15.7 28.2 29.3 17.4 3.5 5.3 12.9	.x 8 42 .1 43.0 41.0 38.0 28.8 35.0 28.5 13.0 28.0 18.0	27.5. 31.0 26.3 20.3 20.3 20.3 20.3 20.3 3.0 4.0 6.5 2.5 3.0 3.0 7.2	en, 34.1 35.7 32.2 28.9 32.5 28.2 12.1 13.8 12.2 6.2 12.4 6.2	36.5 344.8 44.8 37.7 34.5 30.8 29.1 16.7	t Vince Minn. 17.8, 26.2, 30.8, 16.2, 18.8, 26.3, 18.0, 18.	277 353 327 299 28 24 122 200 16 9 9 9
Meaus	For xx	29.4 28.1 26.7 26.0 22.9 18.9 9.6 1.9 1.5 1.1 2.1 1.3 1.0 0	36.4.6 34.6 35.8 30.9 24.0 21.2 25.1 11.8 16.8 18.2	56.8 48.44 41.8 40.1 41.8 39.9 9 37.5 30.0 18.1 18.2 12.4 4 7.5 12.4 12.4 12.4 12.4 12.4 12.4 12.4 12.4	32.7, 28.6 29.7, 5.11.2 13.0 0.0 1.7, 7.55 1.7, 7.5 1.7, 7.5 1.7, 7.5 1.8, 5.8, 6.8, 6.8, 6.8, 6.8, 6.8, 6.8, 6.8, 6	38.3337.00 35.66, 37.00 35.66, 37.00 32.5, 26.87 28.22 29.33 12.99 1.80 20.11	¥2.11 43.0 41.2 36.0 41.2 36.0 21.5 35.0 21.5 21.5 21.5 21.5 21.5 21.5 21.5 21.5	27.5 31.0 20.3 22.8 26.0 0 4.0 6.5 5.2 5.3 1.0 2.5 1.0 4.0 1.0 1.0 4.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1	34.1 33.7 32.2 28.9 32.5 28.2 13.4 16.2 16.2 12.4 18.2	36.5 44.8 44.8 37.7 38.7 34.5 329.1 16.7 121.7 19.4 4.8 8.2	t Vince Minn. 17.8 26.2 26.3 30.8 26.3 18.8 26.3 19.1 5.0 9.9 9.9 13.1 5.0 9.9 12.1 5.0 10.1 10.1 10.1 10.1 10.1 10.1 10.	277 298 24 122 200 166 9 9 11 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Means	Pop 50.9 49.9 49.9 48.3 48.3 48.3 29.5 10.4 10.5 29.4 — 10.5	29.4 26.1 26.0 22.9 0.1 1.5.9	36.4.6 34.6 35.8 30.9 13.4.2 21.2 20.7 4.2 16.8 18.2	56.8 48.4 46.4 41.1 41.8 926.0 337.1 8.8 22.2 4.7 0 30.7 - 5.5 5.5 5.5	32.7 28.6 29.7 29.8 9 27.5 25.1 11.2 12.3 8 13.0 0 1.0 14.5 - 26.3	38.3 37.0 35.6 35.5 32.5 15.7 20.1 12.9 20.1 20.1	42.I 43.0 44.2 38.0 41.2 35.0 28.8 28.8 35.0 18.0 9.0 28.5 35.0 18.0 9.0 27.3	27.5.31.0.22.38.320.33.20.33.20.33.20.33.21.30.32.23.8.23.00.3.00.10.0.4.21.00.10.4	34. I 35.7 32.2 22. I 13.0 32.5 22. I 13.0 6.2 6.2 16.2 16.2 16.2 16.2	36.5 44.8 44.8 437.7 38.7 39.7 31.3 20.1 11.9 44.1 228.0 -6.3 -12.2	17.8 26.2 30.2 30.2 31.8 8.0 3.9 9.9 4.4 9.4 4.9 20.0 10.1	277 355 333 277 299 211 0. —15. 18. —14. —23.
Means	Pop	29.4 26.7 26.7 26.9 21.9 22.9 18.9 9.0 14.9 15.9 15.9 11.2 10.0	35.46.833.8 33.9 24.04.1 22.7 4.01 11.8 8.2 11.2 25.1 12.5 9 12.5	56.8.48.44.8.41.8.39.9.25.37.1.30.0.18.1.18.2.2.2.2.2.2.2.2.30.7.5.30.7.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.9.	32.7, 28.9, 27.5, 11.2, 12.1, 12.1, 13.0, 0.0, 14.5, 25.5, 25.1, 11.2, 23.8, 13.0, 0.0, 14.5, 25.3, 25	38.33 37.06 33.19 32.5.8 31.28 29.3 32.5.5 52.29 1.88 29.1 14.0 20.1 18.0 18.5	42.II 43.0 44.0 44.0 28.8 35.0 22.5 22.5 21.5 21.5 22.5 21.5 21.0 21.0 21.0 21.0 21.0 21.0 21.0 21.0	27.5 31.0 32.3 32.3 32.3 32.3 36.0 0 6.5 5.2 55.3 0 0 7.2 21.0 10.4	34. I. 35. 7 32. 2 22. I. 3. 35. 7 24. 8 12. 2 4. 8 12. 2 4. 8 12. 2 4. 8 . 12. 4 2 12. 4 3 12. 4 2 12. 4 12	36.5 444.8 37.7 38.7 38.7 31.3 32.9 11.16.7 19.4.7 12.7 19.4.7 12.17 19.4.7 12.17 19.4.7 12.17 19.4.7 12.17 19.4.7 12.17 19.4.7 12.17 19.4.7 1	t Vince Minn. 17. 8, 26, 22, 33. 8, 26, 33. 18. 00, 19. 13. 11. 5. 00, 4. 4. 20. 0. 10. 11. 12. 22. 327. 4. 30. 29. 30. 20. 20. 20. 20. 20. 20. 20. 20. 20. 2	277 355 333 277 355 333 277 299 210 0. —15. 18. ——14. ——23. ——24.
Means	Pop For W 550.99 449.99 445.83 20.99 337.4 34.33 20.99 18.86 19.66 19.69	29.4 (26.7) (26.0) (14.9) (15.9) (1.1.2 (1.1	36.4.6 35.3.8 30.9 21.2 25.1 20.7 4.1 11.8 35.8 8.2 11.2 25.1 11.8 11.8 11.8 11.8 11.8 11.8 11.8 1	56.8.445.8.41.8.39.9.037.5.37.1.12.4.41.8.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.2.	32.7 28.6 29.7 29.8 9 27.5 25.1 11.2 12.3 8 13.0 0 1.0 14.5 - 26.3	33.37.00 35.50 35.57 28.22 37.44 3.53 12.92 11.0 20.1	42.1 43.0 38.0 38.0 21.0 21.0 018.0	27.5. 31.0 26.3 22.8 0.6.5 3.0 0.5. 3.0 0.7.2 21.0 10.4 20.5.4 3.0 3.0 1.0 20.4 21.0 22.0 34.0 24.4	en, "" 34.1 35.7 28.9 28.9 28.9 22.1 6.4 0.8 12.4 12.4 -1.6 -1.3 -1.9 -1.9 -1.9	Sain 36.5 444.8 337.7 344.5 38.7 34.5 328.7 31.3 121.7 421.7 421.7 421.7 421.7 421.7 421.7 6.2 6.2 6.2	t Vince Minn. 17.8 26.28 26.3 16.28 26.3 18.00 0.91 15.00 1.1 15.	277 353 337 279 288 244 12 200 16
Meaus	For Port 1	29.4 26.1 26.1 26.1 29.4 26.1 26.1 22.9 9.6 14.9 15.9 15.9 22.7 3.3 3.40	36.4, 33.6, 33.8, 33.9, 9.13.4, 2.25.1, 20.7, 4.0, 1.8, 1.1, 20.7, 2.3, 3.1, 2.3, 3.1, 3.1, 3.1, 3.1, 3.1, 3.1, 3.1, 3	56.8 48.4 41.8 39.9 26.0 330.0 38.1 12.4 4 7.7 0 30.7 30.7 30.7 30.0 30.0 30.0 30.	32.7 28.9 27.5 11.2 12.3 8.0 0.0 1.0 14.5 26.5 26.3 13.0 3.0 14.5 26.3 13.0 3.0 13.0 13.0 13.0 13.0 13.0 13.	38.3 37.0 31.5 32.5 32.5 32.5 32.5 29.3 17.4 3.5 5.3 11.0 20.1 11.0 -11.0 -18	42.I 43.0 38.0 41.2 3.5 35.0 9.0 18.0 9.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	27.5.31.0.3 20.33.20.33.20.33.20.33.00.3.0.0.5.5.5.2.5.2.21.0.4 20.5.2.21.0.4 20.5.2.21.0.4 20.5.2.21.0.22.0.22.0.22.0.22.0.22.0.22.	34. I 35.7 28.9 32.5 22. I 1 2.0 24.8 6.4 2 18.2 21.4 2 16.4 2 18.2 2 18.2 2 18.2 2 18.2 2 18.2 2 18.2	36.5 444.8 444.8 437.7 38.7 38.7 32.3 12.1 12.5 28.0 6.3 29.1 12.5 28.0	t Vince Minn. 17.8 25.2 25.2 25.2 18.6 3 16.2 2 18.6 3 18.0 18.0 18.0 18.0 18.0 19.1 19.1 19.1 19.1 19.1 19.1 19.1 19	275 333 277 298 24 122 200 166 -15 -18
Means	Pop 949.9 49.9 48.8 48.3 29.5 8 10.4 49.9 10.5 29.4 10.5 29.4 10.6 2.2 3.6 10.2 29.4 12.5 29.5 29.5 29.5 29.5 29.5 29.5 29.5 2	29.4, 26.17. 26.0 22.99. 0.11. 3.15. 1.1. 3.1. 3.1. 40.3. 3.3. 40.	36.4.6 35.8 30.9 13.4.2 21.2 20.7 4.1 16.8 18.2 15.9 16.8 18.2 12.1 23.0 16.8 18.2 17.6 18.2 17.6 18.2 17.6 18.2 17.6 18.2 17.6 18.2 17.6 18.2 17.6 18.2 17.6 17.6 17.6 17.6 17.6 17.6 17.6 17.6	56.8 48.4 46.4 41.1 41.8 37.1 30.0 37.5 30.7 7 30.7 7 30.7 7 30.7 8.8 8.8 8.2 2.2 4.8 7.7 0 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8.8 8	32.7 28.6 29.7 228.9 27.5 21.12.1 22.1 23.8 13.0 0 1.0 3.1 14.5 26.3 30.0 -1.0 15.5 -34.0 30.8 -10.5 -34.0 39.8 39.8	38.337.00 35.63 35.57 32.58 15.77 28.23 29.33 12.99 11.80 20.11 20.11 20.11 20.11 20.11 20.12	42.II 43.0 41.0 43.0 41.2 36.0 28.8 8.2 21.5 3.0 22.5 9.0 21.0 21.0 21.0 21.0 3.0 21.0 21.0 21.0 21.0 21.0 21.0 21.0 21	27.5. 31.0. 22.5. 31.0. 22.8. 26.0. 16.0. 6.5. 2.5. 3.0. 3.0. 1.0. 20.5. 2.1.0. 20.3. 22.8.0. 24.4.0. 24.4.0. 24.3.3.0. 24.3.3.0. 34.0. 24.3.3.0. 34.0. 24.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0. 34.3.3.0.	34. I 35.7 7 32.8.9 32.5.2 22. I 13.0 8 12.2.4.8 12.2.4.8 12.2.4.8 2.1.3.4 6.2.2 12.4.8 2.3.3 - 22.3.3 - 23.8.4 6.2.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3.8 2.3 2.3.8 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3 2.3	36.5 44.8 44.8 44.8 36.5 30.6 32.1 12.2 28.0 6.2 -12.2 -12.5 6.2 -12.5 -12.5 6.2 -12.5	t Vince Minn. 17.8 26.28 26.3 16.28 26.3 18.00 0.91 15.00 1.1 15.	27, 353 333 27 299 284 212 200 166 - 5 14 23 32 32 32.
Means	Pop	29.4, 26.7, 26.0, 0.1, 15.9, 15.9, 15.9, 15.1, 21.2, 3.3, 3.12	ver, 36.4.6 33.4.8 33.8.9 33.8.9 33.8.9 33.8.1 33.4.0 0.1.8 32.7 4.0 0.1.8 18.2 25.1 15.9 24.1 18.2 25.7 24.0 24.7 25.7 25.7 25.7 25.7 25.7 25.7 25.7 25	56.8 48.4 44.1 8 43.9 9 220.0 5 37.1 1 30.0 18.1 1 30.0 18.1 1 30.0 18.1 1 30.0 18.1 1 1 2.4 2 2.2 2 2.2 2.2 4 2.7 8 - 1.5 8 7.8 - 1.5 8 7	32.7, 28.9, 27.5.1 11.2 23.8 13.0 0.0 18.1 7.75 26.3 13.0 0.0 18.1 7.5.0 26.3 30.0 11.8 5.3 30.0 30.0 30.3 30.0 30.3 30.0 30.0	38.3 37.0 31.9 32.5.8 31.5,7 20.1 15.7 29.3 17.4 3.5 5.3 17.4 3.5 5.3 11.8 -14.0 -18.0 -1	42.1 43.0 44.0 38.0 28.8 35.0 21.0 21.0 18.0 - 27.3 - 14.0 - 17.0 18.0 - 27.3 -	27.5 31.0 22.8 26.0 16.0 6.5 5.3 3.0 3.0 3.0 3.0 16.0 6.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2	en, "" 34.1 35.7 32.2 28.9 32.5 24.8 16.2 13.4 21.3 6.2 21.4 21.4 21.4 21.5 21.4 21	36.5 444.8 37.7 34.5 30.8 7 31.3 32.1 16.7 31.3 21.7 19.4 4.1 21.7 19.2 2.0 0.8 6.2 -12.5	t Vince Minn. 17. 8. 26.2.2.3.8.8.0.6.2.2.8.8.0.0.18.0.0.19.9.4.0.0.10.11	277 353 33 277 299 911 0 0 — 15 18 — 14 . — 23 . — 35 . — 32 . — 33 . —
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Means	Pop	29.44 26.77 26.00 11.59 9.00 1.49 9.00 1.5.1	36.4, 33.6, 33.8, 30.9, 0.18, 12.4, 20.7, 7.4, 11.5, 9.2, 25.1, 12.4, 27.7, 7.3, 7.7, 27.7, 7.1, 11.1, 12.6, 27.7, 7.2, 11.1, 12.6, 27.7, 12.1, 12.1	56.8 48.4 44.8 44.8 49.9 25.5 5.37.1 22.2 2 2.2 2.2 2.2 2.2 2.3 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5.5 5	32.7, 28.9, 27.5.1 11.2 23.8 13.0 0.0 18.1 7.75 26.3 13.0 0.0 18.1 7.5.0 26.3 30.0 11.8 5.3 30.0 30.0 30.3 30.0 30.3 30.0 30.0	38.337.00 33.70.0331.93 32.58.815,71 22.93.317.44 33.25.82 29.3.317.44 3.3.217.44 3	42.1 43.0 44.0 44.0 44.2 55.0 55.0 55.0 55.0 55.0 55.0 55.0 55	27.5.31.0.22.8.32.0.33.20.30.20.30.20.20.20.20.20.20.20.20.20.20.20.20.20	en, "" 34.1 35.7 32.2 28.9 32.5 24.8 16.4 6.4 6.4 21.	36.5 444.8 444.8 437.7 38.7 30.5 30.5 29.1 14.17 19.4 4.7 28.0 6.2 28.0 6.2 5.7 19.5 7.8 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3 1.3	t Vince Minn. 17. 8. 26.2.2.3.8.8.0.6.2.2.8.8.0.0.18.0.0.19.9.4.0.0.10.11	277 353 33 279 288 244 122 166 9 9 11 0 15 18 18 35 24 25 20
Means	Pop 50.99 49.99 49.99 37.4 43.3 20.9 9 37.4 43.3 20.9 9 18.8 4 10.4 6 6 10.5 5	Silva Riving Mont, 29,4 (26,7) (26,0) (15,9) (15,9) (15,9) (15,9) (16,0) (16,0) (17,0)	ver, 34.46 33.88 30.99 21.24 22.5.1 20.77 4.11 1.2.3 1.15.9 1.15.	56.8.44.1.8.39.9.37.5.37.1.1.2.4.7.0.30.7.7.30.7.1.2.2.2.2.2.2.3.3.3.1.1.3.4.3.3.3.1.1.3.4.3.3.3.1.1.3.3.3.1.1.3.3.3.3	rt Buck. 32.7. 28.9.7. 28.9.7. 28.9.7. 28.9.7. 28.9.7. 29.9.9. 27.5.1 11.2.1 23.8 31.0 0.0 8.11 -7.7.0 14.5 -7.7.0 34.0 39.3 -30.6 39.3 -30.6 39.3 -30.6 39.3 -30.6 39.3 -30.6	38, 3 37,06 31,9 26,8 8, 22,3 3, 12,8 9, 14,0 20,1 20,1 14,0 20,1 20,1 3,5 3,5 20,1 14,0 20,1 20,1 20,1 20,1 20,1 20,1 20,1 20	#42.II 42.II 43.00 38.0 38.0 21.0 21.0 21.0 21.0 21.0 21.0 21.0 21	27.5. 31.0.3 22.83 22.83 22.83 22.83 22.83 22.80 4.0.0 5.5 2.55 3.0.0 7.2 22.0 10.4	34. II 35.7.7 32.2.9 32.5.2.1 13.0.8 12.4.8 16.2.2 12.4.8 16.2.2 12.4.8 16.2.2 12.4.8 16.2.2 12.4.8 16.2.2 12.4.8 16.2.2 17.2.3 18.2.2 18.2.3 19.3 19.3	Sain 36.58 444.88 37.77 344.53 30.87 31.31 21.77 21.77 21.79 28.0 28.0 21.21.55 21.21.58 21.41.0	t Vince Minn. 17.8 26.28 26.3 16.28 26.3 18.0 0.91 15.0	277 353 327 299 288 244 122 200 16 18 18 32 32 32 20 12 20 20 12 20 20 12 20 2
Means	Pop	29.4; 26.7; 26.0; 0.1; 9.6; 15.9; 15.9; 15.9; 15.1; 23.3; 12	ver, 36.4.6 33.8 33.9 30.9 13.4.2 25.1 20.7 4.0 18.2 25.1 23.3 18.2 24.1 24.0 24.1 25.9 24.1 25.9 24.1 25.9 25.1 25.9 25.1 25.9 25.1 25.9 25.1 25.9 25.1 25.9 25.1 25.9 25.1 25.9 25.1 25.9 25.9 25.1 25.9 25.9 25.9 25.9 25.9 25.9 25.9 25.9	56.8 48.4 44.1 1.1 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1.2 1	32.7 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 27.5 28.9 29.9 29.9 29.9 29.9 29.9 29.9 29.9	38, 3 37,06 31,9 26,8 8, 22,3 3, 12,8 9, 14,0 20,1 20,1 14,0 20,1 20,1 3,5 3,5 20,1 14,0 20,1 20,1 20,1 20,1 20,1 20,1 20,1 20	42. II 43.0 38.0 41.2 35.35.0 9.0 0.18.0 9.0 18.0 18.0 18.0 18.0 18.0 18.0 18.0 18	27.5.31.0.3 20.33.20.33.20.33.20.33.20.33.20.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.33.00.34.00.34.00.39.5.00.33.00.34.00.39.5.00.33.00.30.00.0	en, 1835.7 28.9 34.1 335.7 28.9 32.2 22.1 23.0 24.8 6.2 42.8 6.2 42.8 6.2 43.9 6.2 25.1 6.2 23.9 25.5 6.2 25.5 6.3 21.1 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3 6.3	Sain 36.5 444.8 36.5 444.8 37.7 738.7 38.7 33.3 29.1 16.7 19.4 8.2 10.8 6.2 12.1 10.8 6.2 12.5 13.8 14.0 7.2 14.1 7.2 19.2 10.8 11.0 11.0 11.0 11.0 11.0 11.0 11.0	t Vince Minn. 17. 8 26.2 26.3 8.16.2 2.2 8.8 .0 3.8 16.2 8.9 0.9 9.3 1.1 5.0 3.9 -22.4 -25.8 -27.4 -24.8 -27.4 -24.8 -27.4 -2	277 355 337 299 288 242 220 16 9 9 11 10 0 - 15 18 - 23 - 24 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
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New York.—Rome, Oneida county: the temperature fell to -22° on the morning of the 20th.

Lyons, Wayne county: the 20th was the coldest day known

in this section for many years; at 4 a.m. the thermometer indicated -22°.

Watertown, Jefferson county: the weather on the 20th and 21st, throughout northern New York, was the coldest known for many years. At this place the temperature fell to -28° on the 20th, and to -38° on the 21st; at other points in the county it fell to -40° .

Oswego: the minimum temperature, —17°.5 on the 20th, is the lowest recorded since the opening of the signal office here,

Rochester: the minimum temperature, -10°.5, on the morning of the 20th is the lowest recorded in December since Signal Service observations were begun in 1871; lower temperature than the above has occurred in two instances only, viz: -12° in January, 1873, and the same in February, 1875.

North Carolina.—Charlotte: weather very cold on the 19th; minimum temperature, 11°; plants in the hot-houses were killed.

Fort Macon: on the 19th, the temperature fell to 15°.2; on the 20th, ice was two inches thick.

Scott's Hill, 19th: weather very cold, minimum tempera-

ture, 11°

South Carolina.—Charleston: the fountains and pumps in the city froze on the 19th.

Virginia.—Cape Henry: the minimum temperature on the 20th, 15°.3, is the lowest with two exceptions, viz: 12° in 1876 and 7° in 1880, that has been recorded since this station was opened in 1873.

Washington Territory .- Dayton: on the 31st the tempera ture fell to -26°, being the lowest temperature yet recorded here; observations were begun in 1880.

Wisconsin .- La Crosse: minimum temperature on the 25th was -26°, at 8 a.m.; this has been equalled in December in but an instance, viz: in 1876, since the station was established, in 1873.

Wyoming.—Cheyenne: on the afternoon of the 15th the temperature fell from 32° to -8° in four hours, and on the 23d it fell from 42° at 2 p. m. to -12° at 6 p. m.; a range of 54°. On the 16th the daily mean temperature was $-7^{\circ}.0$, the lowest being -13°.4.

FROSTS.

Frosts occurred in the various districts on the following dates:

New England.—1st to 28th.

Middle Atlantic states .- 1st to 11th, 13th, 14th, 16th to 28th,

South Atlantic states.—1st to 4th, 8th, 9th, 10th, 13th, 16th to 28th.

Florida peninsula.—Sanford, 3d; Cedar Keys, 19th, 30th; Archer, 2d, 3d, 10th, 19th, 20th; Tallahassee, 19th; Limona, 3d; Newport, 2d, 3d, 19th, 20th, Manatee, 3d, 4th.

East Gulf states .- 1st, 2d, 3d, 8th, 9th, 16th, 18th, 19th. 20th, 21st, 25th, 26th.

West Gulf states.—1st to 4th, 6th, 7th, 8th, 12th, 13th, 15th, 16th, 18th, 19th, 26th, 31st.

Tennessee.—1st to 5th, 7th to 10th, 12th, 13th, 14th, 16th to 20th, 22d to 28th, 31st.

20th, 25th, 26th, 27th.

Lower lake region.—1st to 10th, 19th, 20th, 23d, 25th, 26th, 27th.

Upper lake region.—1st to 4th, 9th to 27th, 30th, 31st. Extreme northwest.—1st to 31st.

Upper Mississippi valley.—1st to 5th, 8th to 27th, 31st.

Missouri valley.—1st to 31st.

Northern slope.—1st to 18th, 20th to 31st.

Middle slope.—1st to 4th, 8th to 18th, 20th to 31st.

Southern slope.—1st, 2d, 3d, 7th, 9th, 11th, 12th, 15th, 16th, 17th, 19th, 20th, 21st, 25th, 26th, 27th.

Southern plateau.—1st to 31st.

Middle plateau.—1st to 6th, 8th, 10th, 11th, 28th to 31st.

Northern plateau.—1st to 18th, 27th to 31st.

North Pacific coast region.—1st to 13th, 15th. Middle Pacific coast region.—1st to 6th, 9th to 16th, 27th,

29th, 30th, 31st.

South Pacific coast region.—Los Angeles, California, 2d, 3d, 6th, 13th to 17th; Poway, California, 1st, 2d, 3d, 14th to 17th, 30th.

Ice formed at stations in the South, during December, as

Jacksonville and Pensacola, Florida, 19th.

Wilmington, North Carolina, 19th.

Augusta, Georgia, 19th, 20th.

New Orleans, Louisiana, 19th.

Galveston, Texas, 18th.

Indianola, Texas, 18th, 26th.

Brownsville, Texas, 25th, 26th.

Fort Stockton, Texas, 12th, 18th, 19th, 25th, 26th.

PRECIPITATION.

[Expressed in inches and hundredths.]

The distribution of rainfall over the United States and Canada, for the month of December, 1884, as determined by the reports from more than seven hundred stations, is exhibited on chart iii.

In the following table are shown, for each of the geographical districts, as deduced from Signal Service observations, the average December precipitation for a series of years; the average for December, 1884, and the departures from the normal.

Average precipitation for December, 1884,								
Districts	Signal-Se	for Dec. ervice ob- tions,	Comparison of Dec., 1884, with the av-					
	For sev- eral years.	For 1884.	erage for sev- eral years.					
 . 	Inches,	Inches	Inches.					
New England	3.32	6.11	+2.79					
Middle Atlantic states		5-55	+2.13					
South Atlantic states		4.69	+0.33					
Florida peninsula		3.79	+r.30					
Eastern Gulf states		7.10	+1.74					
Western Gulf states		9.91	-1- 5.98					
Rio Grande valley		0.83	-1.11					
Tennessee		6.46	+2.04					
Ohio valley	3.67	5.16	十1.49					
Lower lake region	2.86	2,96	+0,10					
Upper lake region	2.50	4.89	+2.39					
Extreme northwest	0.92	0.99	+0.07					
Upper Mississippi valley	1,96	4.24	+2.28					
Missouri valley		0.82	 -0.04					
Northern slope		1.09	0.15					
Middle slope	0.64	1.17	+0.53 +1.04 +2.86					
Southern slope	0.73	1.77	† ±1.35					
Southern plateau		3.91	T2.50					
Middle plateau		2.70	+1.56					
Northern plateau		4.21	+0.91					
North Pacific coast region		7.51 8.61	-0.65					
South Pacific coast region	2.08	3,88	+4.35 +1.80					
Mount Washington, N. H.	5.46							
Pike's Peak, Colo	1.24	4.70	—0.76 —0.26					
I INV 0 I COM, COLUMNIA COMPANIA COMPAN	1.24	1.50	7-0.20					

With the exception of the north Pacific coast region, Rio Grande valley, and at a few scattering stations in other dis-Ohio valley.—1st to 5th, 8th, 9th, 10th, 13th, 14th, 18th, 19th, tricts, the precipitation for December has been excessive throughout the United States.

In the upper Mississippi valley, west Gulf states, southern plateau, and in the middle Pacific coast region, it has been exceptionally heavy, being more than double the average in these districts.

Decided excesses over the average also occurred in the upper lake region, New England, middle Atlantic states, Tennessee, Ohio valley, east Gulf states and Florida, the departures varying from 1.30 in Florida to 2.79 in New England. At Little Rock, Arkansas, the monthly precipitation was 16.92, or an excess of 13.40 over the December average for the four preceding years; at Shreveport, Louisiana, it was 15.55, or an excess of 10.91 as compared with the average for the last